



MEMORANDUM

11 September 2014
File No. 40420-002

TO: Wellesley College
Ben Hammond, Marianne Cooley

FROM: Haley & Aldrich, Inc.
Paul P. Ozarowski, P.E., LSP, Jennifer L. Sweet, P.E., LSP

SUBJECT: Summary of Environmental Conditions
North 40 Property
Wellesley, Massachusetts

Haley & Aldrich, Inc. (Haley & Aldrich) was engaged by Wellesley College to evaluate environmental conditions at the North 40 property (herein referred to as the subject site) in Wellesley, Massachusetts. The approximately 46-acre subject site consists of one residence, community gardens and undeveloped wooded property (including a former municipal solid waste landfill). Haley & Aldrich completed a Phase I Environmental Site Assessment (Phase I) in July and August 2014. At the request of Wellesley College, Haley & Aldrich then performed subsurface investigations to evaluate the following two “recognized environmental conditions” identified during the Phase I:

- 1) the Town of Wellesley’s former municipal landfill, which reportedly operated between 1955 and 1960; and
- 2) a small former “pump house” structure located south of the Cochituate Aqueduct and north of the railroad tracks, possibly related to former transport of oil to Wellesley College’s main campus.

EXECUTIVE SUMMARY

Our investigations have revealed that the former Town landfill on the North 40 was significantly smaller than previously believed, was used (as intended) primarily for the disposal of ordinary municipal solid waste rather than industrial wastes, and has resulted in contaminant conditions that are remarkably benign relative to what typically is found in and around former municipal landfills. Still, we did identify conditions that require reporting to the Massachusetts Department of Environmental Protection (MassDEP), and then further response under that agency’s regulations governing the investigation and remediation of land affected by releases of oil or hazardous material. Based on our findings to date, this work can be confined to the landfill itself. We identified no adverse impacts spreading beyond the landfill’s relatively small footprint. Finally, we identified no evidence of petroleum or other contamination at the former pump house facility located south of the aqueduct.

DISCUSSION

On behalf of Wellesley College, Haley & Aldrich performed a subsurface exploration program during July and August 2014 in the area of the former landfill and in the area of the former “pump house” structure. The primary objectives of the exploration program were to delineate the lateral extent of landfill refuse, determine depth of landfill refuse within the center of the landfill at select locations, to characterize the landfill refuse and soil quality, and to evaluate potential groundwater and soil gas impacts associated with the landfill, both within and beyond its delineated footprint. The program also included evaluation of potential impacts to soil and groundwater related to historic operations at the former “pump house” structure.

The subsurface exploration program consisted of 14 test pits around the perimeter and within the center of the former landfill, 2 deep soil borings within the center of the landfill, and 5 soil boring/groundwater monitoring wells and 5 co-located soil vapor monitoring points located outside the perimeter of the landfill. Landfill gas was field monitored with a combustible gas instrument and samples of mixed degraded refuse and soil were collected from test pits where refuse was encountered and submitted to an analytical laboratory for chemical testing. Landfill gas was also field monitored in the perimeter soil vapor monitoring points. Groundwater samples were collected from monitoring wells and submitted to an analytical laboratory for chemical testing. The locations where we conducted subsurface explorations are shown on the attached figure.

The test pit and soil boring program confirmed the presence of municipal refuse in an area estimated to be approximately 4.9 acres. This footprint is significantly smaller than the 23 acres that the Town historically leased for landfilling purposes and the 9-acre area preliminary delineated through a geophysical survey of the landfill conducted in the 1980’s. The bottom of landfill refuse materials was encountered in two soil borings and in one test pit ranging in depth from 7.5 ft to 29 ft below ground surface. Remaining test pits were completed to delineate the lateral extent and general quality of refuse.

The landfill refuse observed within the test pits was characterized as household waste material typically disposed of at municipal landfills during the period of time in question (1955-1960). Landfill refuse observed included glass and glass bottles, metal cans, other metal and wire, wood, paper, fabrics, plastics, leather, rubber, concrete and bricks, roofing materials, car parts (mufflers, wheel rims, etc.), and leaves. There were signs of potentially burned materials at five test pit locations. There were no obvious signs of the disposal of industrial wastes; the landfill appears to have been used exclusively for the disposal of municipal solid wastes.

Results of analytical testing of some of the soil/degraded refuse samples taken from within the landfill’s footprint indicated elevated levels of semi-volatile and volatile organic compounds above reportable concentrations established in the Massachusetts Contingency Plan (MCP). A polychlorinated biphenyl (PCB) compound was detected above its reportable concentration in one location. The few reportable conditions identified in the soil samples were only marginally above the relevant reportable concentration. Although the MCP establishes fast-track (i.e., 2-hour or 72-hour) reporting obligations for certain conditions that are considered to pose an elevated risk of harm to human health or the environment, the reportable conditions discovered at the landfill do not have to be reported until 120

days (four months) after their discovery. Overall, contaminant concentrations are lower than would be expected for soils and refuse located in a typical solid waste landfill that operated in the 1955-1960 time frame.

Results of analytical testing of groundwater samples indicated an elevated level of arsenic in one monitoring well located immediately downgradient (i.e., south) of the landfill. This one result was slightly above the MCP reportable concentration for arsenic, and also is subject to a 120-day reporting rule. Dissolved arsenic is commonly observed in landfill groundwater, which typically is lower in oxygen content because of the decaying waste materials. These so-called “reducing conditions” have a tendency to cause the arsenic that is naturally present in the soil to dissolve into the groundwater. The concentration of arsenic detected in this single well is likely a result of this typical landfill condition. Arsenic was not detected in any other groundwater wells above the MCP reportable concentration, including a well located farther away from the landfill and south of the Cochituate Aqueduct and is anticipated to be a localized condition. In our opinion, the analytical results for groundwater are remarkably clean and indicate that the landfill has had little impact on the quality of groundwater immediately adjacent to the landfill. It is possible that the single arsenic detection marginally above the reportable concentration may, through additional sampling in that location, be demonstrated to have been anomalous.

Methane, a typical landfill-producing gas, was detected in two test pits at low levels and was not detected in the remaining test pits. Methane was not detected in the soil gas samples collected from the perimeter soil vapor monitoring wells. Based on the results of the soil gas screening along the perimeter of the landfill and the very low concentrations of methane measured in test pits during excavation, methane migration through soil gas at concentrations that may pose a health or safety risk to any other portion of the North 40 or any adjacent properties is not anticipated to be occurring.

The test boring/monitoring well in the footprint of the former “pump house” structure was completed to a depth of 27 ft below ground surface. Observations on soils and field screening results during the drilling of the boring did not indicate evidence of contamination. Petroleum compounds, SVOCS, and VOCs were not detected in the groundwater sample collected from this monitoring well. Some dissolved metals were detected in groundwater at this location, but in all cases below MCP reportable concentrations.

Attachment

Figure 1 – Site and Subsurface Exploration Location Plan

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